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LU, ZHIYU	
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte PATRICK CONTI

Appeal 2009-003724
Application 10/606,189
Technology Center 2600

Before MAHSHID D. SAADAT, THOMAS S. HAHN,
and ELENI MANTIS MERCADER, *Administrative Patent Judges*.

MANTIS MERCADER, *Administrative Patent Judge*.

DECISION ON APPEAL[1]

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[1] The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, or for filing a request for rehearing, as recited in 37 C.F.R. § 41.52, begins to run from the "MAIL DATE" (paper delivery mode) or the "NOTIFICATION DATE" (electronic delivery mode) shown on the PTOL-90A cover letter attached to this decision.

STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134(a) from the final rejection of claims 9-16, 18-24, 26-34, and 36-40. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

INVENTION

Appellant's claimed invention is directed to a radio-frequency switching device incorporated in wireless communication terminals, such as cellular telephones operating under different transmission standards (i.e., GSM, DCS, PCS, and WCDMA) (*see* Spec. 1:2-7).

Claim 9, reproduced below, is representative of the subject matter on appeal:

> 9. A radio-frequency (RF) switching device comprising:
> an input/output terminal;
> a plurality of RF channels connected to said input/output terminal; and
> switching means for selecting one of said plurality of RF channels based upon a switching control signal, said switching means comprising
> a respective control module connected to each RF channel, each control module comprising
> a control input for receiving the switching control signal,
> a PIN diode having a cathode connected to said input/output terminal, and an anode, and
> a control transistor comprising a control terminal connected to said control input, and a first conducting terminal connected to the anode of said PIN diode, the first conducting terminal forming a common node between an anode of a PN diode formed by the control

terminal and the first conducting terminal of said control transistor and a corresponding parasitic PN diode.

THE REJECTIONS

The Examiner relies upon the following as evidence of unpatentability:

Ashar	US 3,840,886	Oct. 8, 1974
Ogawa	US 4,386,327	May 31, 1983
Tamura	US 2002/0180510 A1	Dec. 5, 2002
Clifton	US 2003/0001787 A1	Jan. 2, 2003

The following rejections are before us for review:

1. The Examiner rejected claims 9-14, 18, 26, and 36 under 35 U.S.C. § 103(a) as being unpatentable over Tamura in view of Clifton, Ashar, and Ogawa.

2. The Examiner rejected claims 15, 16, 19-24, 27-34, and 37-40 under 35 U.S.C. § 103(a) as being unpatentable over Tamura in view of Clifton and Ogawa.

ISSUES

The pivotal issues are:

1. Whether the modification of Tamura in view of Clifton teaches a multiband transceiver or "plurality of RF channels" as recited in claim 9; and

2. whether the modification of Tamura in view of Ogawa teaches a "parasitic PN diode" as recited in claim 9.

PRINCIPLES OF LAW

"[O]ne cannot show non-obviousness by attacking references individually where . . . the rejections are based on combinations of references." *In re Keller*, 642 F.2d 413, 426 (CCPA 1981).

"The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference . . . . Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art." *Id.* at 425.

ANALYSIS

Rejection of claims 9-14, 18, 26, and 36

At the outset we note that we adopt the Examiner's findings of fact and reasoning as set out in the Answer, but we add the following for amplification.

Appellant first argues (Br. 11) that modifying Tamura with Clifton's teaching of a multiband switch would increase the complexity of Tamura's high frequency switch because additional signals would be required by the control section, and the additional channels would also have to interface with the bias power supply.

We are not persuaded by Appellant's argument. We agree with the Examiner (Ans. 17-19) that Clifton's teaching value is that a common transmit receive (TX/RX) switch device can be duplicated to form a multiband transceiver, such as the TX/RX switch shown in Clifton's Figure 2. Appellant's reference (Br. 11) to increased complexity caused by adding channels is irrelevant because the test for obviousness is not whether the

features of a secondary reference may be bodily incorporated into the structure of the primary reference, but rather, the test is what the combined teachings of those references would have suggested to those of ordinary skill in the art (i.e., a common TX/RX switch device can be duplicated to form a multiband transceiver). *See Keller*, 642 F.2d at 425.

Appellant (Br. 13-15) further argues that there is no motivation to modify the respective control modules in Tamura so that the control transistor Q1 (as shown in Fig. 11C) also forms a common node between an intersection of an anode of a PN diode formed by the control terminal and the conducting terminal of the control transistor, and a corresponding PN diode. Appellant notes that Tamura does not teach parasitic diodes (Br. 13).

We are not persuaded by Appellant's argument. We again agree with the Examiner (Ans. 19-22) that while Tamura does not teach a parasitic diode, the modification of Tamura with Ogawa does teach the parasitic diode. The Examiner (Ans. 19-20) correctly interpreted the claims in view of Appellant's Specification, wherein, by comparing Appellant's Figures 1 and 4, it is apparent that the claimed "PN diode" and "a corresponding parasitic PN diode" (shown as Q1 in Figures 1 and 4) constitute alternative devices, or in other words, alternative functional equivalents.

The Examiner acknowledged that while Tamura teaches the control input, a PIN diode, a control transistor, and their connections (Ans. 4, 19), Tamura does not teach the limitation of "the first conducting terminal forming a common node between an anode of a PN diode formed by the control terminal and the first conducting terminal of said control transistor and a corresponding parasitic PN diode," which is shown in Appellant's Figure 4. The Examiner relied on Ogawa's teaching of using a two-diode

circuit as an equivalent of a control transistor, shown as Q20 in Ogawa's Figure 4 (col. 3, ll. 28-39). Thus, we also agree with the Examiner's reasoning (Ans. 19-22) that it would have been obvious to one skilled in the art at the time that the invention was made to have modified Tamura's control transistor Q1, as shown in Figure 11C, with the functional equivalent of Ogawa's Figure 4 two diode circuit because they constitute well known functional equivalents.

For the reasons articulated *supra*, we will sustain the Examiner's rejection of claim 9 and for similar reasons the rejections of claims 10-14, 18, 26, and 36, as Appellant does not present any separate arguments of patentability with respect to these claims.

Rejection of claims 15, 16, 19-24, 27-34, and 37-40

Appellant (Br. 16-23) repeats substantially the same arguments as presented above for independent claims 15, 23, and 33. Accordingly, we will also sustain the Examiner's rejections for these claims and their dependent claims 16, 19-22, 24, 27-32, 34, and 37-40 for the same reasons as articulated *supra*.

CONCLUSIONS

1. The modification of Tamura in view of Clifton teaches a multiband transceiver or "plurality of RF channels;" and

2. the modification of Tamura in view of Ogawa teaches a "parasitic PN diode."

ORDER

The decision of the Examiner to reject claims 9-16, 18-24, 26-34, and 36-40 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(v).

AFFIRMED

babc

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